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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,420	08/14/2001	Mao-Jen Chen	BHT-3199-7	7246

7590 05/06/2004
DOUGHERTY & TROXELL
Suite 1404
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Falls Church, VA 22041

EXAMINER

HASHEM, LISA

ART UNIT	PAPER NUMBER
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2645

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,420

Applicant(s)

CHEN, MAO-JEN

Examiner

Lisa Hashem

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claim 1 is pending in this office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,940,750 by Wang in view of U.S. Patent No. 6,510,314 by Kuo.

Regarding claim 1, Wang discloses a method of using a self-oscillating mixer made from a MESFET with a dielectric resonator for providing feedback as a self-oscillating down converter of a satellite down converter (see Abstract), said satellite down converter including a circuit having at least a receiver and an output port (column 3, lines 36-45), said method comprising: providing a self-oscillating mixer (Figure 2, 36) between a low-noise amplifier (Figure 2: 32, 34) and an intermediate frequency amplifier (Figure 2, 38) included in said circuit, such that said self-oscillating mixer serves as a local oscillator and a mixer (see Figure 2; column 3, line 25 – 60).

In Figure 5B, the IF amplifier (Figure 5B: 115) includes a NPN bipolar transistor (Figure 5B, Q4). A PNP bipolar transistor (Figure 5B, Q3) is used to bias transistor (Figure 5B, 112) that is included in the self-oscillating mixer (Figure 5B, 110; column 4, line 59 – column 5, line 59).

Wang does not disclose using a bipolar junction transistor as a self-oscillating down converter, such that the bipolar junction transistor serves as a local oscillator and a mixer.

Kuo discloses a method for mixer circuits on integrated circuits that are used to convert between radio frequency (RF) signals and intermediate frequency (IF) signals in wireless - communications devices (column 1, lines 7-11). A conventional mixer circuit converts a RF signal into an IF signal by multiplying the RF signal by a local oscillator (LO) signal provided by a LO circuit. One embodiment of a mixer circuit is a double balanced mixer (column 1, lines 36-53). The double balanced mixer includes a means for mixing RF input signals with LO input signals to produce two intermediate signals with IF components that are inverted with respect to one another. The double balanced mixer further includes a means for converting the two intermediate signals into a single IF output signal to be provided at an output terminal, for biasing the means for mixing, for filtering out undesirable signal components from the two intermediate signals, and for buffering the output terminal from at least one element (column 4, lines 13-23).

The double balanced mixer that is implemented on an integrated circuit includes NPN bipolar junction transistors, which facilitate in local oscillation and mixing (column 3, lines 7-24; column 4, line 60 – column 6, line 18; column 7, lines 13-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Wang to include a method for using a bipolar junction transistor as taught by Kuo to serve as a local oscillator and a mixer. One of ordinary skill in the art would have been lead to make such a modification since using a bipolar junction transistor to facilitate local oscillation and mixing simplifies the circuit and reduces manufacturing cost. The space

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and cost savings in implementing the circuitry make the double balanced mixer smaller and less expensive than the conventional mixer.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- U.S. Patent No. 5,760,632 by Kawakami et al disclose a double-balanced mixer circuit that is used as a mixer circuit for an up-converter or down-converter in mobile communications; wherein the circuit includes bipolar transistors

5. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for formal communications intended for entry)

Or call:

(703) 306-0377 (for customer service assistance)

Hand-delivered responses should be brought to: Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (703) 305-4302. The examiner can normally be reached on M-F 8:30-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (703) 305-4895. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

LH

lh

May 1, 2004

FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

A handwritten signature in black ink, appearing to read 'Fan Tsang', with a stylized, flowing script.